

Robotics 30 – Where Are You?

Movement

1. Challenge
2. Moving Forward
 - a. Program Dissection
 - b. Reversing Motor Polarity
 - c. Renaming Motors
 - d. Timing
 - i. Sumo Bot Challenge
 - ii. Wait State Investigation
3. Speed and Direction
 - a. Motor Power Levels
 - i. Simulated Acceleration
 - ii. Power Levels
 - b. Turn and Reverse
 - i. Turning Investigation
 - ii. Sentry Simulation Level 1
 - c. Manual Straightening
 - i. Driving Straight
4. Shaft Encoder
 - a. Shaft Encoders
 - i. Inventor's Guide
 - b. Forward Until Distance Part 1
 - c. Forward Until Distance Part 2
 - i. While Loops
 - ii. Boolean Logic
 - d. The Sensor Debug Window
 - i. Basketball Drills
 - ii. Power Levels with Encoders
 - e. Forward and Turning
 - i. Turning with Encoders
5. Automated Straightening
 - a. Automated Straightening Part 1
 - i. if-else statements
 - b. Automated Straightening Part 2
 - i. Driving Straight 2
 - ii. Seeing the Difference
 - c. Values and Variables Part 1
 - i. Variables
 - ii. Global Variables
 - d. Values and Variables Part 2
 - i. Robot Acceleration

6. Integrated Encoders
 - a. Forward for Distance with IME's
 - i. Integrated Encoder Module
 - b. Principles of PID Control
 - c. Forward for Distance with PID Control
 - d. Forward for Target Distance
 - i. Basketball Drills
 - ii. Sentry Simulation Level 1
7. Labyrinth Challenge

Remote Control

1. Challenge
2. Joystick Mapping
 - a. Introduction to Remote Control
 - b. Real-Time Control
 - c. Joystick Mapping Values Part 1
 - i. Race to the Finish
 - d. Joystick Mapping Values Part 2
 - i. Robo-Slalom
3. Timers
 - a. Time and Timers
 - b. Using Timers
 - i. Round-Up
 - ii. Bull-in-the-Ring
4. Buttons
 - a. Remote Control Buttons
 - b. Remote Start
 - i. Remote Control Buttons
 - c. Controlling the Arm Part 1
 - d. Controlling the Arm Part 2
 - e. Controlling the Arm Part 3
 - i. Robo-Dunk
 - ii. RoboWriter
 - iii. Turn Buttons
5. Minefield Challenge

Sensing

1. Challenge
2. Limiting the Arm
 - a. Configuring Sensors
 - b. Limiting the Arm Part 1
 - i. Wall Follower
 - ii. Robotic Mouse
 - iii. Robocci

Group: _____ P: _____ Date: _____

- c. Limiting the Arm Part 2
 - i. Quick Tap
 - ii. Addition and Subtraction
- 3. Behaviours and Functions
 - a. Behaviours and Functions 1
 - b. Behaviours and Functions 2
 - i. Optimizing Code
 - ii. Incorporating Functions
 - c. Passing Parameters Part 1
 - i. Real World Values
 - ii. Seeing the Difference
 - d. Passing Parameters Part 2
 - i. Robo-Dunk 2
 - ii. Robot Acceleration
- 4. Forward Until Near
 - a. The Ultrasonic Rangefinder
 - b. Forward Until Near
 - i. Sentry Simulation Level 2
 - c. Straight Until Near
 - i. The Speed of Sound
 - ii. Sentry Simulation Level 3
 - d. Straight Until Near (Fine Tuning)
 - i. Sonic Scanner

Fabrication

Final Project